INWARD INVESTMENT FOR SOFTWARE AND INFORMATION SERVICES IN NORTHERN IRELAND

INPUT

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IDB SECTORIAL DEVELOPMENT

INWARD INVESTMENT FOR SOFTWARE AND INFORMATION SERVICES

Prepared for
The Industrial Development Board for
Northern Ireland

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Abstract

This report was prepared specifically for the Industrial Development Board for Northern Ireland. It contains the following:

- An overview of the computer software and services industry in Western Europe and of the technological and other industry driving forces
- A critique of the IDB's document "Inward Investments"
- Comments on remote skill training needs for IDB personnel in overseas offices
- Contact lists of companies and named individuals within those companies to be approached by the IDB as potential inward investors

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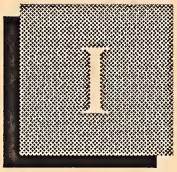


Introduction

1 Introduction

A Objectives

The overall objective of the research project was to assist and support the IDB in the implementation of their Inward Investment Sectoral Campaign for the Software and Information Services Industry through the following:

- The targeting of specific geographic areas and companies whose needs can be matched to what Northern Ireland has to offer
- The provision of key market information to the IDB's Overseas Representatives

Specifically, the objectives of this particular research study were as follows:

- Providing a short critique of the draft document concerning inward investment with particular reference to the rationale for selecting target companies. (TASK 1)
- Identifying up to 30 contacts with vendors of computer software and services who were potentially interested in inward investment opportunities in Northern Ireland. In each case, a justification for their selection to be included. Twenty of these contacts were to be in the U.K., and ten in the Eastern seaboard of the United States. (TASK 2)
- Providing an overview of the computer software and information services industry and a brief description of the technological and other factors driving the growth of the industry. (TASK 3)
- Additionally, to make recommendations (in respect of this material) with regard to the need for remote skill training for IDB staff. (TASK 4)

- Reviewing IDB visual aids and promotional material in order to identify possible improvements to assist in achieving the objectives of the Inward Investment strategy

B

Scope

The scope of the study was specifically defined by targeting the software and information services industry, defined as comprising the following sectors:

- Processing Services
- Network Services
- Software Products
- Professional Services
- Systems Integration
- Turnkey Systems

The IDB had selected the three sectors of Network Services, Software Products (especially Systems Software) and Systems Integration as the areas that would most likely provide the best opportunities. INPUT examined and commented upon this selection and made appropriate recommendations, which are included in this report.

C

Methodology

INPUT consultants studied the IDB's draft document concerning inward investment and met with the IDB to discuss its conclusions at the commencement of the project. A summary of these conclusions is presented in Chapter II of this report. (TASK 1)

In order to identify vendor contacts for the IDB, INPUT undertook a vendor search based upon its comprehensive records and continuous research activities in the computer software and information services industry. Vendors are identified in profile form with supporting information and a justification for their selection. (TASK 2)

INPUT also prepared an overview of the computer software and information services industry and a brief description of the technology and other factors driving industry growth. INPUT met with the IDB to make recommendations in regard to the need for remote skill training for IDB staff, potentially using this material. (TASK 4)

D

Report Structure

The remaining chapters of this report are organised as follows:

- Chapter II provides a summary of INPUT's conclusions with respect to the IDB's draft document concerning inward investment.

- Chapter III contains the overview of the computer software and services industry and the brief description of the technological and other factors driving industry growth.

- Chapter IV lists the identified vendor contacts resulting from INPUT's industry search presented in the form of short profiles on each company, with the justification for their selection.

Overall Conclusions and Recommendations

II

Overall Conclusions and Recommendations

This chapter contains INPUT's overall conclusions with respect to the IDB draft document concerning inward investment and recommendations concerning the need for remote skill training for IDB staff.

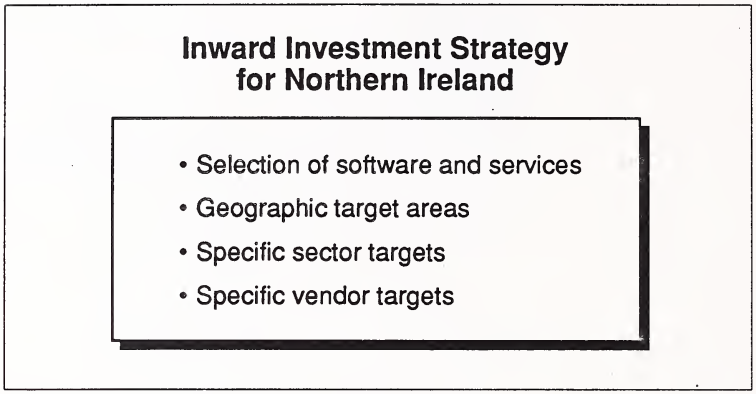
A Inward Investment Strategy

The following comments are a critique of the ideas put forward in the document, *Software and Information Services Strategy for Inward Investment.* (February 1990). (Paragraph numbers are referenced as necessary.)

The comments can be grouped under the following broad headings, listed in Exhibit II-1:

- The rationale for the selection of software and services. Why is this a particularly attractive area to target for inward investment?
- The geographic targets to be selected. Where are software and services vendors most likely to be found who will have or can be persuaded to have a rationale for investment in Northern Ireland?
- Are there any specific industry sectors that will lend themselves, by the nature of the work they do, to be persuaded to invest in Northern Ireland?
- And finally, the specific types of vendors to be targeted. Is it possible to identify any common characteristics that can lead to an increased probability of success?

EXHIBIT II-1

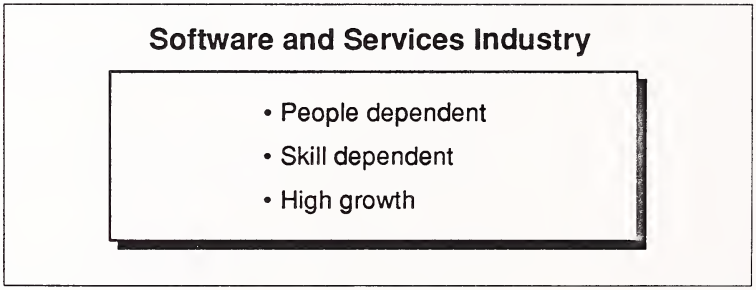


Each of these areas is discussed below.

1. Selection of Software and Services

We have reviewed already the software and services industry at some length. We have clearly seen that it has a number of characteristics that match some of the benefits that Northern Ireland can offer. These are listed in Exhibit II-2.

EXHIBIT II-2



Firstly, software and services are highly people-dependent activities, and this is vital, as the IDB's overall objective is the creation of employment opportunities.

Secondly, that requirement for people is qualified by the need for skills. Software and services businesses are essentially built around the knowledge and capabilities of their staffs. Proximity to universities or other foci of skills is often an important element in attracting companies to locate in a particular area. It should, of course, be noted that high-tech companies also have the need to employ less skilled categories of staff as well, e.g., security guards, secretarial support and other support staff.

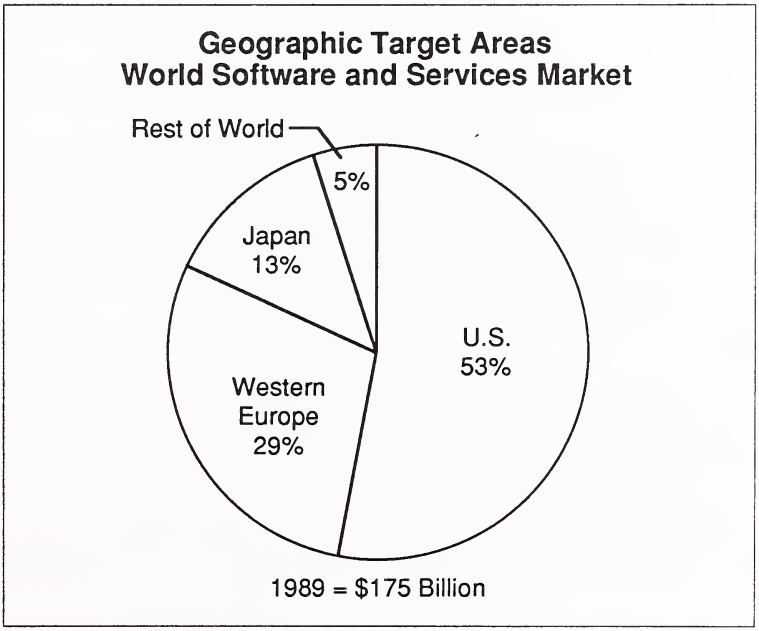
Thirdly, software and services is a high-growth sector and is expected to remain so into the foreseeable future. It can be confidently expected to outperform the overall economy by a considerable margin, and thus represents real growth potential.

Given the general levels of skills shortage in the industry and the demographics that indicate increasing shortages of young people in general, the above arguments represent a strong case for considering this sector. (Overall in the U.K., there will be 1 million fewer people in the 18-24 age range over the next couple of years.)

2. Geographic Target Areas

In respect to the geographic targets to be selected, it is instructive to examine the worldwide distribution of the computer software and services market, as shown in Exhibit II-3.

EXHIBIT II-3



This demonstrates very clearly how concentrated, from a worldwide point of view, the software and services industry is: Over half of the market is within the United States.

Only 5% of the market falls outside the three groupings of the U.S., Western Europe and Japan.

The fast approach of "1992" in Western Europe, not to mention developments in Eastern Europe, has placed particular emphasis on gaining a European "position" for U.S. and Japanese companies.

This therefore emphasises and supports the argument for looking to identify U.S. or Japanese companies wishing to enter the European market. (Paragraph 13 refers, also Paragraph 15 items iii and iv.)

INPUT expects the entry of Japanese software and services vendors to track and closely follow the arrival of Japanese companies in other industry sectors, notably in banking and finance.

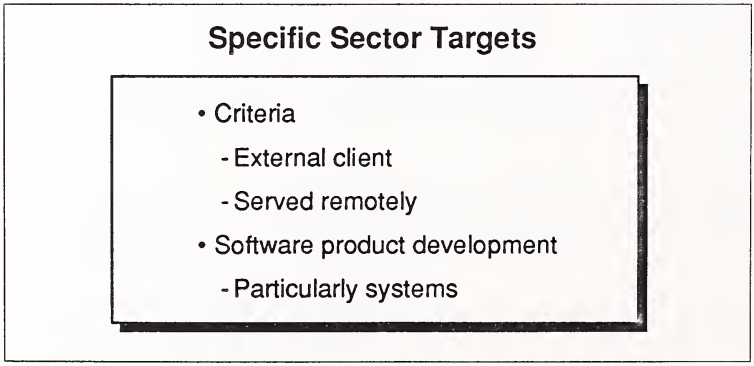
With regard to U.S.-owned organisations, acquisitions have often been the preferred route for establishing European presence, notably:

- EDS through the purchase of Unilever Computer Services Ltd (UCSL)
- NYNEX through the purchase of BIS
- AT&T through the purchase of Istel

3. Specific Sector Targets

The specific question to be addressed here is the extent to which it is possible to identify specific characteristics of software and services firms that will make them more likely to be persuaded to invest in Northern Ireland. Exhibit II-4 identifies the key points discussed below.

EXHIBIT II-4



In the inward strategy document (paragraph 14) the point is made that projects best suited to fulfilling the inward investment criteria would be those:

- Addressing opportunities outside Northern Ireland
- But not requiring close and continuous liaison with the customer

The most obvious manifestation of this requirement (and naturally taking the generation of employment into account) is that of the software development centre. Software products (for any purpose) are developed, maintained and upgraded at a site remote from the customer. This is in contrast to professional services which (with some exceptions, like education and training) are almost always provided at, or close to, the customer's premises.

In INPUT's opinion, this is the principal singularity of a profile or set of criteria to be used in targeting prospects for inward investment.

It should be noted that the need for software product development is a requirement for nearly every sector of the software and services industry.

Software products are in most cases the basis for a processing or network service. They are the basis of turnkey systems, and in the form of "kernels", they can be the basis of the sale of professional services and systems integration services. "Kernels" are building blocks for application solutions that are modified through custom designed and developed additions to form a complete system. A "kernel" on its own does not function as a solution; it simply provides economies by saving the development of commonly used modules.

As was noted earlier in the review of the software and services industry, software product development—particularly that for systems software—places the highest demands for talented programmers and specialist skills.

Additionally, as the demand to more closely match users' applications requirements grows, there is some pressure to site applications development close to major concentrations of clients, where this possibility exists.

Consequently, INPUT would concur with the assessment in the inward strategy document that systems software is a high priority and applications software only a medium priority. However, turnkey systems should be rated at the same level as applications software as, in most cases, no real distinction (for the purposes of this analysis) can be made.

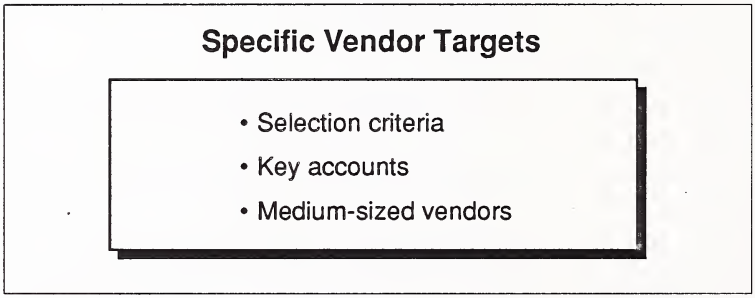
The systems integration market is difficult to assess. Since it is highly specific to an individual client's needs, the work (for the commercial

sector) is generally conducted on, or close to, clients' premises. As is pointed out in Paragraph 21 though, defence-type contracts, albeit under threat from the growth of detente, will tend to be developed remotely. It has to be recognised as well that SI contractors, by definition, tend to be large firms. Consequently, were one encouraged to come to Northern Ireland the scale of the proposed operation might be substantial.

4. Specific Vendor Targets

The final question to be addressed is the extent to which it is possible to identify any further common characteristics in target companies that would lead to increased probability of success. Exhibit II-5 refers to the arguments proposed in response to this question.

EXHIBIT II-5



It is not clear to INPUT that this is possible. The software and services industry is highly fragmented (the top ten companies in Europe hold a 20% market share, and there are in excess of 10,000 vendors active in the market) and highly diversified in terms of its activities. Neither lack of financing nor the inability to recruit appropriate skilled staff are common problems across the industry.

INPUT would concur with the "key accounts" concept described in Paragraph 15 (i). It is important that the IDB ensures that the most senior executives in these companies are aware of the potential benefits of inward investment in Northern Ireland and that they are kept up-to-date on it. Situations, market conditions, and opportunities change over time. Therefore, the IDB "solution" needs to be kept in the minds of these senior executives so when the appropriate conditions are met, the possibility exists of its being grasped.

In addition, the financial incentives are more likely to be of interest to medium-sized companies meeting a step-function advance for them to achieve a new level of business growth. The possibility of offering this kind of risk-sharing agreement might have attractive possibilities.

Small companies are extremely unlikely to be considered targets for the inward investment campaign. In most cases, they are situated close to their customer base; they are by nature small scale, and few have ambitious growth plans.

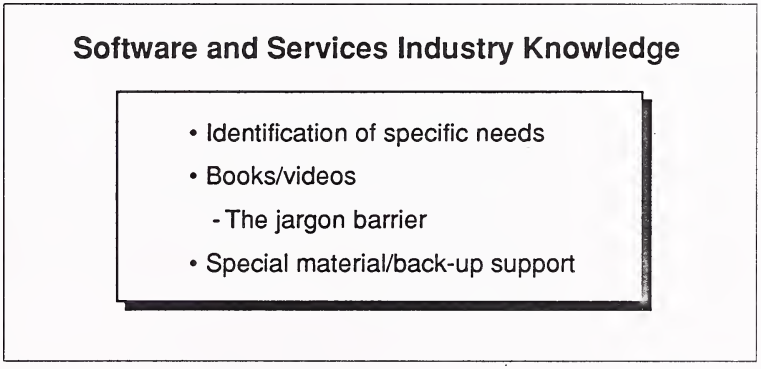
All the criteria reviewed here are overridden by the need to identify executives prepared and willing to consider investing in Northern Ireland.

B

Remote Skill Training

One of the issues facing the IDB in implementing an inward investment strategy in the computer software and services industry is the need for (remote) skill training for IDB employees to make them more aware of the possibilities within the software and services industry. Exhibit II-6 lists the headings under which this issue is addressed in this section.

EXHIBIT II-6



In the first instance, the technology overview and the overview of the software and services industry included in Chapter III should be of assistance. In overall terms, the first priority in such a situation is the identification of the particular knowledge or skills that are needed. It is considered most likely that what is needed is an understanding of the major business, commercial, and marketing factors facing the industry, together with a good understanding of its structure and role within the computer industry at large.

Unfortunately, it is this kind of strategic industry perspective that is generally not found in standard books and audio-visual material, which is why there is, in the industry at large, such a rapidly growing market for education and training services.

Ideally, INPUT would recommend that a special course be prepared and that the target audience be brought together for two to three days. This would allow considerable interaction and cross-fertilisation of ideas. Assuming that there are practical reasons for not following this course of action, INPUT recommends an alternative approach.

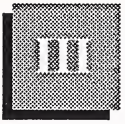
In the first instance, certain books and videos could be recommended. As already stated, these are usually not sufficiently focussed on the specific task in hand. However, the material could be filtered, and it does increase the comfort factor of the trainees to have some material to refer to, particularly to break through the jargon barrier.

The number of targeted individuals for this skills training initiative does not seem to warrant the development of a CBT (computer-based training) course.

Material such as BBC documentaries on computers and computer-related topics can be a useful source of information.

In addition to this, special material could be prepared in the form of scripted slide/overhead presentations to really focus on key business issues—the economics, the finance, the skills needs of the software and services business. It would be important to have a back-up question and answer service in order to give additional support and confidence to the recipients. Over a period of time, the ability to discuss the issues being raised with an experienced and knowledgeable industry expert could prove invaluable.

Software and Information Services Overview



Software and Information Services Overview

A Technology Advance

The rapid development of technology and the continuous advance of its applications provide the fundamental driving forces of the computer software and services industry.

The key technology advances can be grouped as:

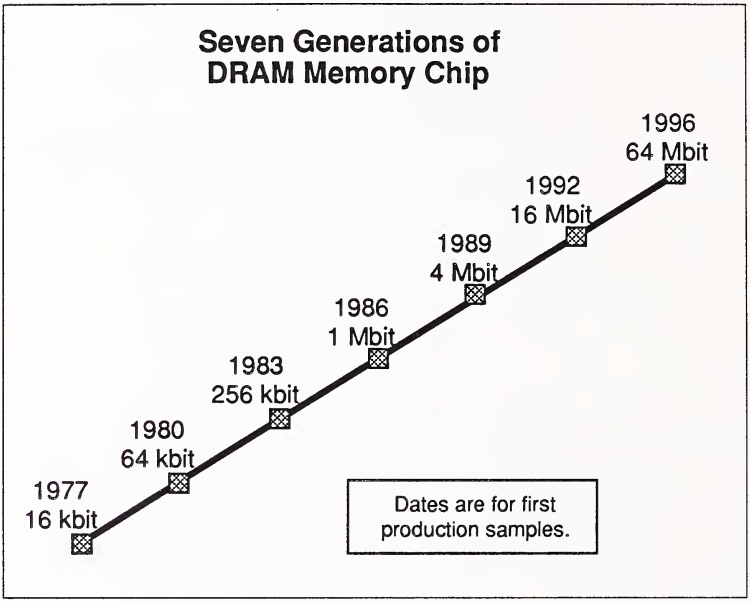
- Components—essentially the development of integrated circuits and technology
- The application of the component technology to the design and development of central processing units
- Advances in peripheral equipment, for example, in data storage devices
- Advances in telecommunications technology
- Developments in software technology, e.g., languages, CASE (computer-aided software engineering), and database management

1. Components

The dramatic progress of component design is illustrated in Exhibit III-1, which shows the historical (and projected) progress in the generations of memory chips, from 16k bit chips in 1977 to the anticipated 64M bit memory chips in the mid-1990s.

In electronic component terms, this same technology has evolved from microprocessors in the late 1970s containing the equivalent of 80,000 transistors per chip, to what is expected to be the one billion transistor chip. The achievement of this level of integration will require components with a new structure; this will be the level of gigascale integration.

EXHIBIT III-1



The pursuit of silicon chip component advances is, however, only one element of the pursuit for even more concentration of processing power and memory capability. The other two principle lines of approach are:

- Optical computer technology—the replacement of electricity by light
- Biological computer technology—the attempt to build computer systems that effectively imitate the functions of the human brain

2. Central Processing Units

This rapid progress in the capability of components has, of course, directly led to the enormous development in the power and capacity of the central processing unit. Thus, for any given level of computing power capability, the technology advance has delivered:

- Lower prices
- Lower space requirements
- Lower power and heat dissipation requirements

The most obvious manifestation of this is the PC, the personal computer. For all levels of computing power, however, the phenomenon has been that as cost, space, electric power and heat dissipation have decreased,

new applications and new uses have multiplied. There is now hardly any aspect of life that has not been affected by digital computer technology.

Future expectations for the development of central processing unit capabilities can be directly related to the component generations:

- VLSI—very large scale integration (between 10^7 and 10^5 components per chip), which was first achieved in the late 1970s and was surpassed in the late 1980s
- ULSI—ultra large scale integration (between 10^7 and 10^9 components per chip), which is the current level of development likely to last the remainder of this decade
- GSI—Gigascale Integration (between 10^9 and 10^{11} components per chip) could be reached by the year 2000.

This expected development not only provides the increased processing power but also the increased central memory capacity necessary to complement it through the accommodation of more complex software systems.

The progress of increasing power and capability for central processing units has to date been achieved through the same basic architectural design. Adaptations of that architecture—such as parallelism—do offer further possibilities for development.

Essentially, parallelism involves the simultaneous execution of multiple operations by multiple processing units situated in a single unit. The practical difficulties of achieving increased performance out of parallel architecture systems has led to the emergence of differing designs. Two basic examples are:

- The Cray X-MP, which consists of four parallel-connected supercomputers
- The IBM 3090-600, which is built from six processors, each containing a scalar and vector processor

This level of parallelism is considered to be "coarse-grained", with relatively few powerful processing units, in contrast to the experimental "fine-grained" parallel computers, machines containing a relatively high number of processing units that utilise distributed memory.

Whilst all types of processors are growing in power capability, the two examples most closely identified with the need for power are supercomputers and workstations.

Supercomputers are primarily targeted at very complex scientific and technical applications. Their performance is measured in the number of floating-point operations they can perform per second—"flops". Normally, very powerful supercomputers can achieve as much as a billion flops (gigaflop); in practice, their real performance is considerably less, perhaps by as much as a factor of ten. Supercomputers capable of performance levels 100 times greater than levels achieved today are confidently predicted by some authorities.

Workstations—very powerful personal computers with an emphasis on graphics capability—have also been targeted towards scientific and technical applications, notably CAD (computer-aided design), software engineering and publishing.

3. Peripheral Equipment

A central processing unit without peripheral equipment would be like a human brain without a body. The peripheral equipment serves to provide input and output channels to the central computer and meets the needs for intermediate storage of data.

In addition to the central memory, considered above as part of the central processing unit, there exist two levels of peripheral storage—intermediate memory and mass memory.

Intermediate memory consists typically of disk storage, of which the most common types are the 5.25" and 3.5" Winchester technology disks used for personal computers. Intermediate disk storage allows for "economically" holding many millions of bytes (characters) of data to which relatively quick, but not instantaneous access is required. Technology improvement in this area is concentrated on making the reading heads smaller and increasing the number of tracks on the disks, thus increasing the overall capacity through the use of new materials. Increasing the disk rotation speed will serve to increase the speed with which data can be input and output.

The use of optical storage media (CD ROM) is still limited for computer use because of the difficulties of erasing recorded data and rewriting.

Mass memory refers to the utilisation of magnetic tape and micrographic media (e.g., microfiche) for archival storage and backup. Optical storage does represent a very attractive alternative in this area because of its density of storage; for example, a single 14" optical disk holds the equivalent of 50 reels of magnetic tape.

Input/output devices traditionally implied punch cards or key-to-disk units for data entry and line printers for output. Today, the entry of data via keyboard-display terminals is supplemented by such devices as

encoded document readers and light pens, and by OCR (optical character recognition).

Voice recognition and image (or pattern) recognition remain two areas of great promise for radically changing the way we communicate with computers. However, the technical and software challenges that will enable these devices to achieve practical application are immense.

Laser printers are well established in the market place but continue to be developed and improved. Personal computers often utilise low-cost laser printers at eight pages per minute, while high-end models for large systems are available that achieve speeds of up 200 pages per minute.

Display screens have become ubiquitous as an input/output channel for all types of computers. The challenge is to produce even better quality screens whose resolution—measured by the number of pixels (picture elements)—is an important criterion in engineering and design applications. High resolution screens for workstations typically will have one million pixels.

4. Telecommunications

Data processing and telecommunications have continued to converge to form today's modern information systems. The permeation of "intelligence" into networks of distributed and centralized systems means an increasing flow of software into products and in embedded forms in the telecommunications sector.

Advances in telecommunications are being driven from two technological standpoints—fibre optics and digitisation.

Fibre optic technology allows for the transmission of data through optical fibres in the form of laser-generated light pulses. This technology allows for the transmission of much larger volumes of data and is possible over traditional communication lines. For example, a transatlantic optical fibre cable is capable of carrying as many as 40,000 conversations simultaneously. This is approximately ten times the capacity of a conventional undersea cable.

Digitalisation of communications networks is usually manifested as the development of ISDN (integrated services digital network). In a digital network, signals are binary coded; sounds are sampled and coded just like data within computer systems. Naturally these "sound" recordings can be stored and processed like computer data. Thus, ISDN holds out the potential of a wealth of new services in which both voice and data services can be intermingled. Together with fibre optic technology, which provides a dramatic increase in communications bandwidth, the voice and image applications of the future will become achievable.

5. Software Technology

So far, we have described briefly the broad sweep of hardware technology that forms the platform upon which information systems can be built. However, without software, none of this technology could generate the applications that are the raison d'etre for its use. Software makes the link between the equipment (being changed and improved by technological advance) and the applications, which develop in line with the environment they are designed to serve.

Software technologies are the enabling tools and methods by which systems engineers can build and develop the applications.

In this brief review, four important areas merit particular attention:

- Languages
- Software Engineering
- Database Management
- Artificial Intelligence

a. Languages

Given the immense investment in coded systems and programmes (it has been estimated that there are in the world in excess of 80 billion lines of COBOL code and that this total is being added to at the rate of over 1 billion lines per year), it is not surprising that we find only gradual evolution in the introduction of new language developments.

Both COBOL and FORTRAN have been around for 30 years, and introductions of new languages—notably IDB's initiative with PL/I—have failed to gain rapid acceptance. Recently, the only real innovation has been the introduction of Ada and perhaps also the development of the C language. Ada, the rights to which are owned by the U.S. Department of Defense, was designed to facilitate the implementation of large military systems. It is possibly still too early to decide whether Ada has truly met its design aims, and therefore, whether it will achieve widespread acceptance.

b. Software Engineering

The whole process of developing systems can be assisted by formal methods and aids. The term software engineering is used to describe this area. Of particular significance is the area of CASE (computer-aided software engineering).

Software engineering methods and tools are available to assist in the implementation of all phases of application development. In many cases, they are accessible from dedicated workstations. The objective is

to ensure that design is carried out strictly, that the application matches the user's requirements more clearly, and that coding and maintenance tasks will be made easier. However, it is as well to be cautious about the claims made for CASE. Software development is difficult because there are so few exploitable design regularities; therefore, software development proceeds at the pace of the tortoise, hardware development at the pace of the hare. Tools are useful, but know-how is decisive.

c. Database Management

Database management systems are another important area due to the need for storing and gaining access to the data to be processed. Information held in computers is being recognised as a corporate asset. However, many difficulties are faced in attempting to bring together unconnected existing structures and combine them into a whole accessible to all users (security restrictions apart). Much effort is being expended in this area, particularly in connection with relational database models.

d. Artificial Intelligence

Another important area of software development is that of artificial intelligence or AI. Work in this area is being undertaken in such fields as:

- Expert Systems
- Network Languages
- Artificial Vision

Expert systems are designed to simulate the thinking of human experts, specialists, in particular knowledge domains. Application areas are in financial modelling, medical diagnosis, geological analysis and computer systems configuration.

Natural languages represent an attempt to develop computer interfaces that provide the ability to communicate in everyday language, and therefore provide as a secondary benefit human language translation.

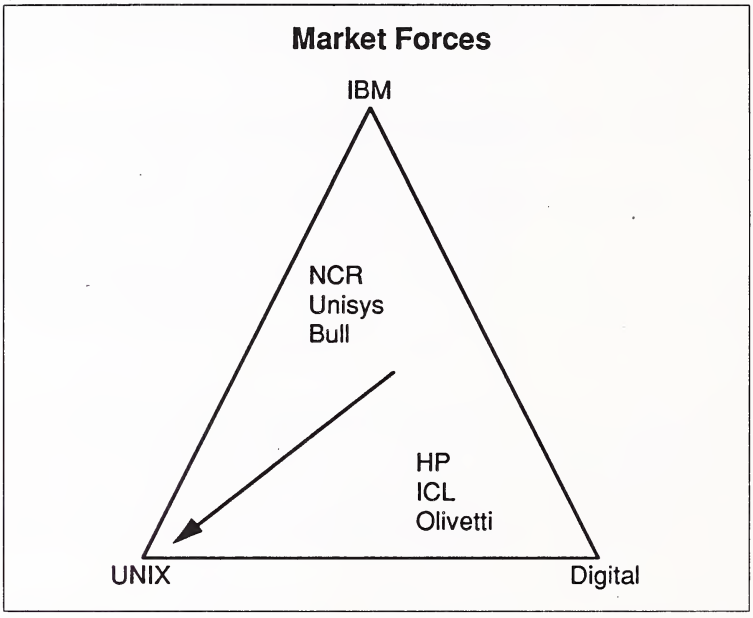
Artificial vision is another area in which an attempt is being made to get a computer device to act in a "human" way. Currently, this is an area facing significant technical difficulties.

No assessment of software technology development would be complete without a mention of UNIX and OSI (open system interconnection).

UNIX has risen to prominence, not because of any particular outstanding technical features, but because a pool of existing software products and expertise has created a "critical mass" effect that makes it overwhelmingly attractive as a development platform for independent vendors and

all other vendors that do not have a critical market share. Exhibit III-2 illustrates this phenomenon and shows that only IBM and Digital have sufficient market pull to maintain their own proprietary bases. Even so, the pull of UNIX is such that both IBM and Digital have themselves entered the UNIX market.

EXHIBIT III-2



OSI (open systems interconnection) is a communications model put forward by the International Standards Organisation (ISO). It aims to persuade different manufacturers and software vendors to simplify applications portability through building communications systems to a common set of standards.

6. Information Systems

The rapid technological advance in the computer industry has brought and will continue to bring fundamental changes to the range of computer applications and to the way they are managed. In general, INPUT can typify this process of change over the last 20 years as follows:

- From relatively simple, standalone systems to highly complex, interrelated systems

- From homogeneous to heterogeneous, in respect to both vendors and types of equipment and software available

- From relatively isolated and ancillary back-office systems applied to discrete areas of an organisation, to critical systems operating at the front-end and affecting virtually every aspect of the organisation with a need for communication among the different parts

These changes have two very powerful effects on the significance of information systems to an organisation. Firstly, they have made these systems indispensable to an organisation's successful and continued operation; today's systems can be described as mission critical. Secondly, they have presented senior executives with the need to strategically manage their application and use.

The information system has become a powerful agent for changes in the way that an organisation conducts its affairs, competes with similar organisations and manages itself profitably. The information systems can be so tightly integrated into the operations of an organisation that they become the principal factor in determining the types of services and products that can be provided, particularly for banks and airlines. There has been much discussion about gaining competitive advantage by the application of IT, and doubt has been cast as to how long such a competitive advantage can be sustained. Nevertheless, no organisation today can afford not to achieve parity with its competitors on basic information systems infrastructures.

Rapid advances in every aspect of science and technology are having considerable impact upon the overall environment within which all organisations must operate. As has often been commented upon, we now exist in an information-orientated society; the advance of technology has made this a widespread phenomenon. This information-orientated environment is creating a more competitive environment; it is changing the way organisations are structured and is breaking down geographic and other market barriers.

Faster communication allows a more rapid response to consumer actions. This has the effect of increasing competition in markets that place emphasis on the need for more rapid change and development of products, as well as the need to reduce costs and develop more efficient ways of managing business.

Organisations are consequently seeking to reduce their bureaucratic overhead, shorten their decision structures and timescales, and of course to utilise information systems to provide the tools for achieving these ends.

A key phenomenon is the emergence of global markets. No longer do geographical and physical limitations restrict the potential of an organisation to its physical base; competitive conditions and the search for efficiency demand that producers seek commonality in basic product design and manufacture, but customise the delivered product, not only to suit ingrained buyer tastes and habits in different country markets, but to serve the competitive need to meet emerging niche requirements.

In summary, not only has the technology changed but the *requirement* for information systems has changed, and consequently, the *nature* of information systems has changed.

Clearly, all these changes have had a profound effect on the vendors that serve these requirements and the competitive environment in which they operate.

B
Software and Services

All of these changes, many of them profound in terms of their impact on the industry and on users, lead logically to an assessment of the computer software and services industry. It is this area that is perhaps playing the most significant role in the ongoing application of computers to the business and organisational information processing needs of society.

This section, a review of the software and services industry, is in three parts:

- **An outline of its functions and focus.** Who are the industry participants? What is the work they do? What are the services that they provide? What aims have they?
- **A survey of the market potential.** How big is it as a business, and what kind of growth expectations are there over the next few years?
- **An analysis of the industry structure.** Where are the real opportunities, and how can they be exploited for the benefit of inward investment in Northern Ireland?

1. Function and Focus

Over the last decade there has been a relentless tendency to shift the emphasis on information systems development away from the blind acceptance of computer technology as a "good thing" towards the achievement of business results, improved administrative performance, etc.—namely to obtain solutions for the application of computer systems.

Consequently, there has been increasing emphasis on the software and services necessary to deliver these solutions and less emphasis on the equipment platforms (the hardware) on which they are run.

We have already examined briefly the technological driving forces in this industry—it is the software and services elements that turn these increasingly powerful hardware resources into solutions to every sort of problem.

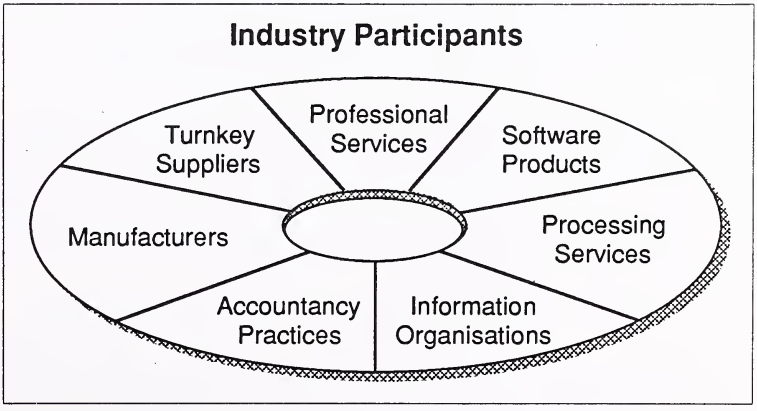
It is the IT professionals—the people in this industry that analyse problems, structure data, design and configure systems, write and test programmes and maintain and support the operational systems—who deliver solutions to the ultimate consumer.

The software and services industry has thus emerged as an area of high focus, and not just for the equipment manufacturers that traditionally have dominated the computer market.

The industry is fragmented, and it services a variety of individual needs, many of them on a local basis. Often the financial barriers to entry are relatively low, and fundamentally it is people based.

As shown in Exhibit III-3, many different types of organisations have been drawn to participate in this industry sector: professional services companies, processing services companies and software product companies, the manufacturers that need to emphasise the solutions of what they are selling, and finally, the major accounting firms that have crossed over from management consultancy more strongly into the computer arena. Most notable among these is Arthur Andersen, which created Andersen Consulting and Andersen Software. Information companies like Reuters and Dunn and Bradstreet also participate strongly in this business.

EXHIBIT III-3



2. Market Potential

To gain some insight into this industry's potential, it is instructive to briefly review the "backcast" as well as the forecast for the development of software and services. This is provided in Exhibit III-4.

EXHIBIT III-4

The Development of Software and Services

	1979 ($ Billions)	CAGR* (Percent)	1989 ($ Billions)	CAGR* (Percent)	1994 ($ Billions)
Equipment/Related Services	17	15	72	10	115
Software Application Products	1	35	6	20	15
Services	6	17	28	18	63
Total	23	17	106	13	193

*Compound Annual Growth Rate

The numbers for this exhibit are expressed in billions of U.S. dollars. The figures are for Western Europe and are in current dollars (including allowances for inflation).

The exhibit is divided into three sections:

Equipment and equipment-related services comprise hardware and system software—operating systems, database management systems, etc., which are often (but not exclusively) provided by equipment vendors. Since equipment vendors frequently (and there is evidence they are trying to extend this concept) bundle system software into the price of the equipment, they actually still hold a very strong strategic position in this sector.

Equipment maintenance services are also included because again, this sector is dominated by the manufacturers. The TPM (third-party maintenance) companies have built a business by attacking this sector, but they still only account for some 15% of the total maintenance market in Europe.

Software application products is simply the sale and support of specific software products designed to provide a standard application solution to a common set of business problems. These application packages fall into two broad categories:

- Cross-industry (XI) packages, designed for an application found in all sectors—for example, accounting and payroll
- Industry-specific (IS) packages, designed only for a particular industry sector e.g., transportation planning or manufacturing control

The services sector comprises:

- Processing services—provided on computer bureau or networks
- Professional services—the people-related services, such as consultancy and system development

The key observation about the exhibit is the comparison between the relative decline of the equipment-related (manufacturing dominated) sector and the increasing prominence of the software application products and services sectors.

It is clear where the major opportunities lie and why so much interest is now being taken in the software and services industry.

3. Industry Structure

A look at the markets for software and services alone means removing the equipment sales. Some equipment however, is, delivered as part of a service solution (turnkey systems and systems integration), which will be referred to in more detail later.

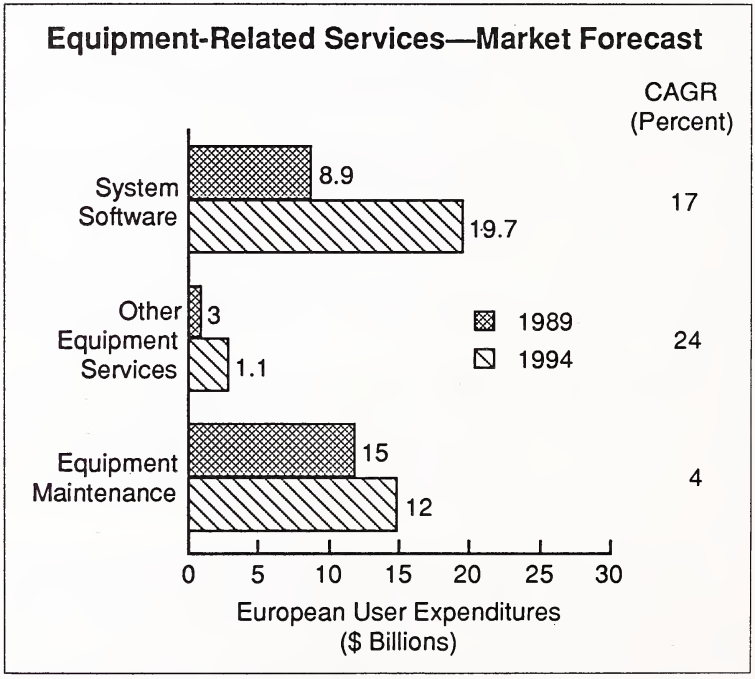
Essentially the software and services industry comprises a number of delivery modes (the form in which the service is delivered to the customer). These are grouped in line with the analysis already shown:

- Equipment-related services, except the sale of computer hardware
- Application product solutions—application packages that can be delivered separately or combined with equipment
- Processing services—computer-based services and data services provided over networks
- Professional services—people-based services

4. Equipment-Related Services

The equipment-related services sector, excluding the actual equipment sales, falls basically into three groups. Exhibit III-5 indicates INPUT's forecast for these groups in Western Europe. The first two, equipment maintenance and other equipment services (essentially professional services), are dominated by the equipment manufacturers themselves, which represent 85% of the market. To a large extent, these services have to be provided locally and do not need detailed examination, although it should be recognised that there is a growing tendency to provide remote support (teleservice) based on phone diagnosis and remote monitoring.

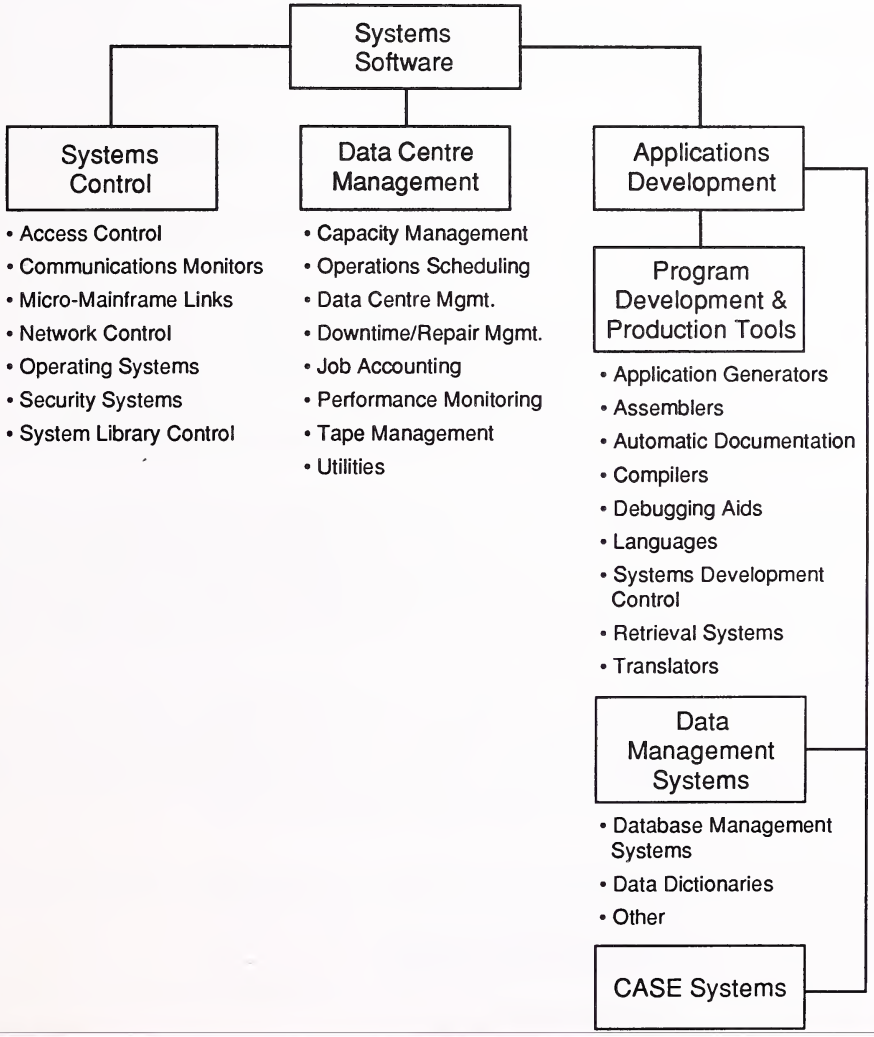
EXHIBIT III-5



The largest of these three sectors is systems software. This sector is dominated by the equipment vendors who, it is estimated, held just over 80% of the market in 1989. The potential for equipment vendors to increasingly bundle systems software into, in effect, a systems platform is a potential deflation to this subsector. Exhibit III-6 shows INPUT's analysis of the systems software sector structure.

EXHIBIT III-6

Structural Analysis of the Systems Software Sector



The systems software subsector is of considerable interest because its development and maintenance (error correction and upgrades) are carried out at a centre remote from the end user. The need for it to run efficiently, its central role in the computer system and its inherent complexity demand that the highest calibre programmers are assigned to its development.

The systems software market is undergoing radical changes due to a number of very important forces:

- Growing end-user demand for UNIX as a future option, even if not required today
- The need for efficient and flexible network-controlling software for both LANs and WANs
- Increasing use of CASE and other tools in an attempt to offset shortages of skilled programmers
- A move to relational data base management systems (DBMS)
- The start of the development of standard systems architectures, such as IBM's SAA

The growth of UNIX within Western Europe was estimated in 1989 by INPUT to be in the range of 40% to 60% per annum. The European Commission has been one of the major driving forces in pushing agreed international standards within Europe. In 1989, many EC public tenders demanded a UNIX option, as did many important private sectors such as banking, financing and retail.

The demand for efficient LAN-to-LAN and LAN-to-WAN software continues to grow. Distributed computing is being driven by cheaper and more powerful PCs. Network systems software has to be able to handle multiple operating systems environments at both the end-user and central computing sites, plus network protocols.

CASE tools still have limitations in certain areas. These tools can be categorized as:

- Development tools (I-CASE)
- Maintenance tools

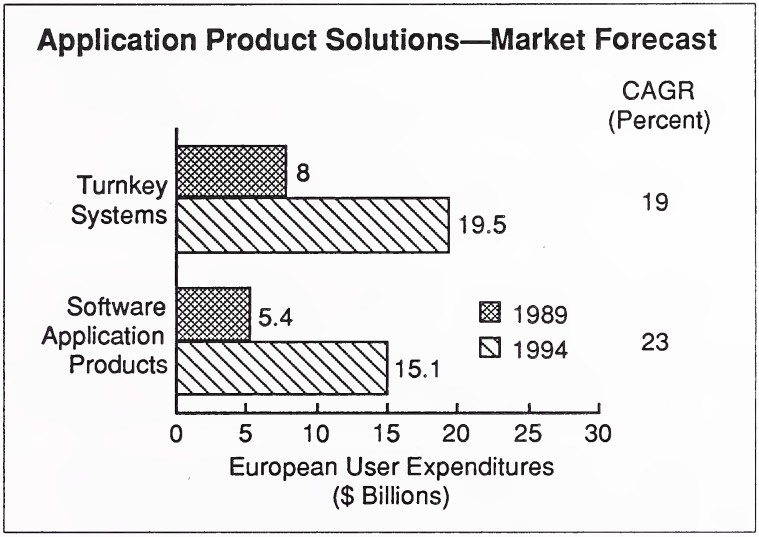
INPUT sees considerable opportunities for CASE tools in the 1990s.

IBM began to make moves into this area of software products during 1989, with its Application Development Cycle (AD/Cycle) standard.

5. Application Product Solutions

The second major area is that of application product solutions. The market growth estimates for this area are shown in Exhibit III-7.

EXHIBIT III-7



This area is composed of two subsectors:

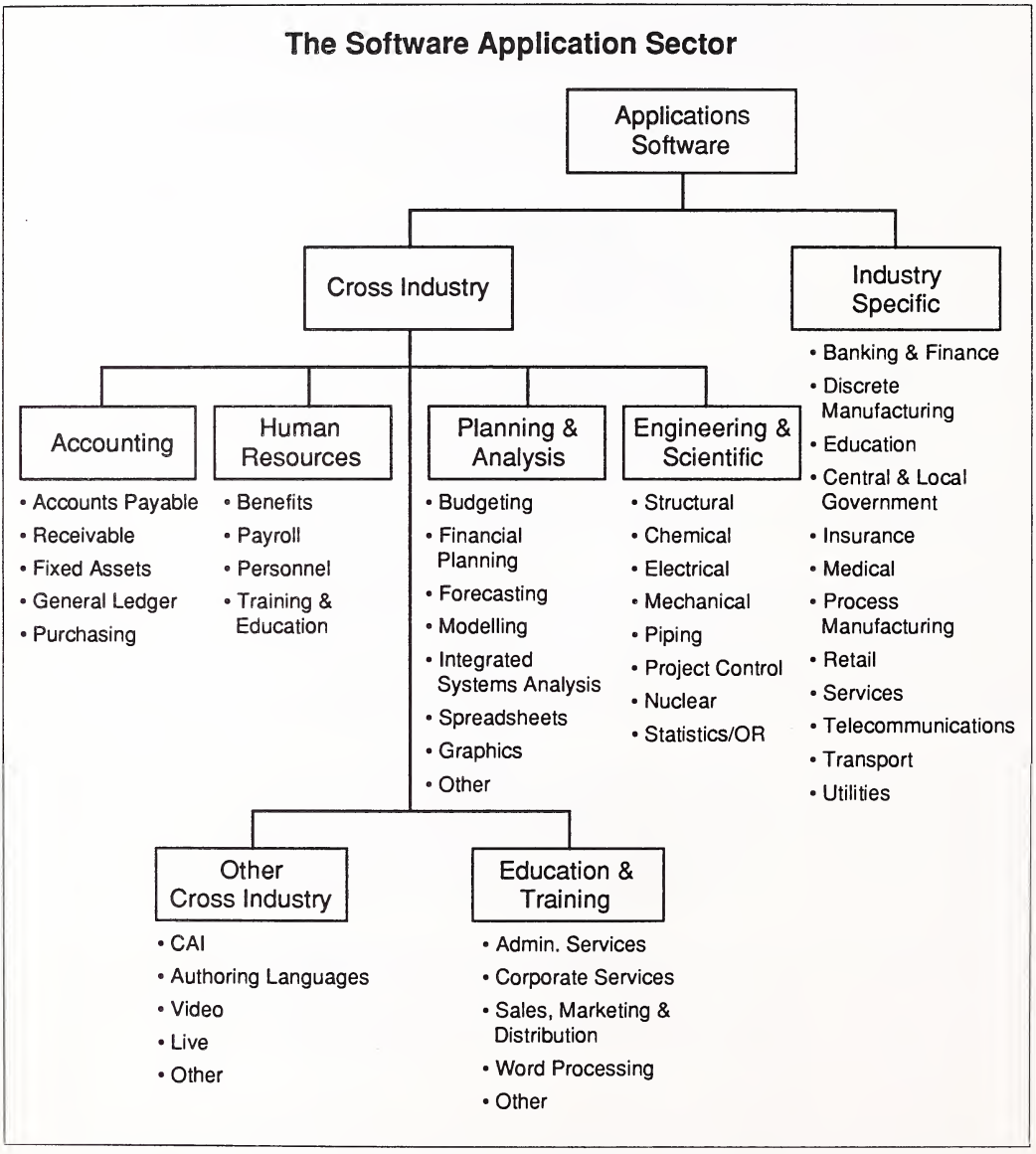
- Software application products—software products sold directly to users
- Turnkey systems—the vendor combines an application software product with the equipment platform upon which it runs. It is then sold as a complete solution together with any necessary professional services for its installation. The vendor is offering a standardized solution as a complete package. In order to qualify as a turnkey system, the vendor must take title to the equipment.

Although software applications need to be supported locally, like any software product, they are developed and maintained/upgraded in centres remote from the customers. Although potentially not as complicated as systems software, many of the same principles apply to their development.

The market size estimates for turnkey systems include the equipment, which in 1989 was judged to represent approximately 55% of the total.

A more detailed view of the software application sector is shown in Exhibit III-8.

EXHIBIT III-8



High growth for applications products is forecast, due to:

- The much faster growth of PCs/workstations than minis and mainframes
- The trend towards standard rather than bespoke applications as the cost of skilled programmers continues to rise
- The availability of more and better standard applications, a trend driven by the increasing power of equipment platforms
- The movement within Western Europe for agreed international standards, allowing a more stable environment within which software developers can operate
- The trend towards graphical end-user interfaces, making it easier for software developers to sell new standard applications
- The increasing use of 'kernel' software, allowing vendors to customise applications for different Western European countries or end-user environments.

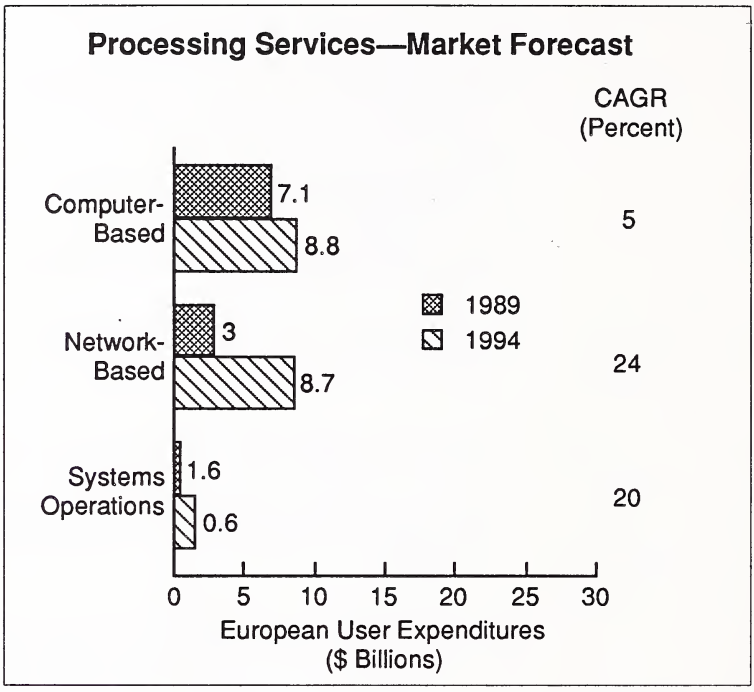
The growing importance of the PC/workstation is a reflection of the continuing improvements being made in the power/performance of this type of equipment platform. The Intel 846 chip today allows equipment vendors to sell desktop PCs that are as powerful as minis were a few years ago. These machines can run on a variety of operating systems—MS/DOS, PS/2 or UNIX. End users have much greater flexibility and can choose between single-tasking/single-user environments under MS/DOS or multi-tasking/multi-user environments under UNIX.

6. Processing Services

Processing services is the collective term for that set of services provided by vendors based on computer equipment, software and facilities owned by the vendor.

The sector essentially comprises the three components presented in Exhibit III-9, which shows INPUT's market forecasts.

EXHIBIT III-9



a. Computer-Based

This implies that the processing element on the computer is the major element of value added. Typical services are:

- Utility services—access to basic software tools (language compilers, assemblers, DBMS, sorts, scientific library routines, etc.) enabling users to develop their own problem solutions.

- Other services—carry-in batch processing, computer output microfilm services (COM), data entry services, and disaster recovery/ backup services.

The most popular processing service is for payroll, where clients are relieved of the worry of running a highly critical application that may have many changes imposed over time by, for example, by government legislation.

b. Network-Based

This subsector includes all those services where the provision of the communications link is the most critical aspect of the operation. It includes the provision of enhanced services such as packet switching, store and forward, error correction, etc., and applications such as electronic mail (E-mail), electronic data interchange (EDI), electronic funds transfer (EFT) and electronic information services (EIS), which typically is the provision of on-line database services.

c. Systems Operations (Facilities Management)

This is the operation of all or a significant part of a customer's information systems function under a long-term contract of not less than one year.

7. Professional Services

The professional services market is the largest sector of the computer services and software business in Europe. It accounted for about 30% of the total Western European market in 1989. It was valued by INPUT at over $15 billion, approximately $1 billion more than the software products sector.

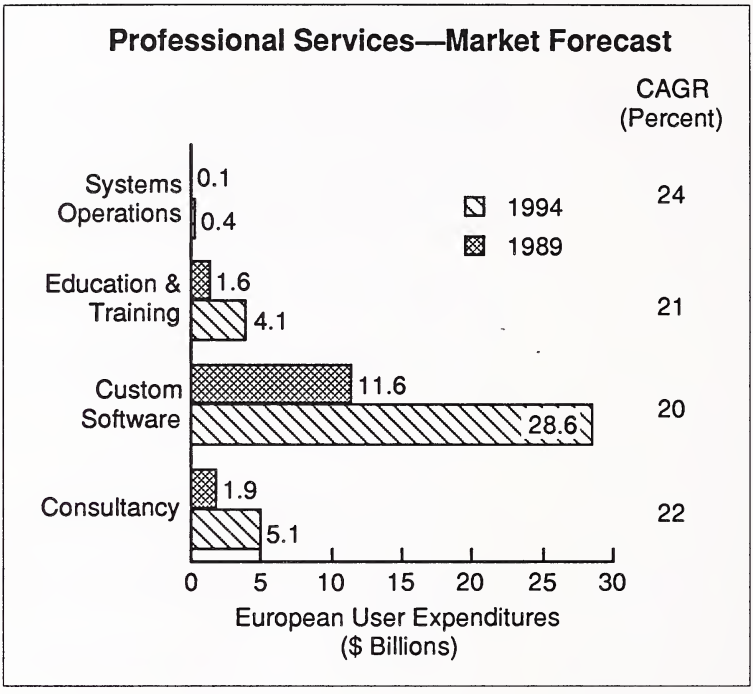
Its components, as shown in Exhibit III-10, are:

- Consultancy—related to IT, this sector does not include management consultancy.
- Custom software—all services associated with the development of applications specifically for an individual client. This subsector includes contract staff.
- Education and training
- Systems operations

Similar to the systems operations sector within the processing services except that the vendor does not own the equipment, but simply provides the personnel to provide the service.

Education and training might be an interesting area to pursue since it is often provided off site.

EXHIBIT III-10



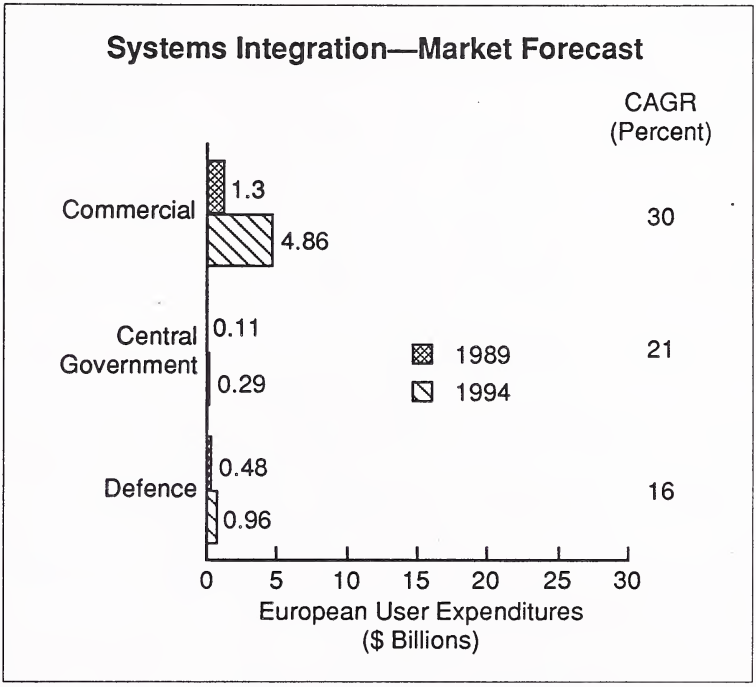
8. Systems Integration

In addition to 'pure' professional services, there also exists the related and very important area of systems integration. However, an important distinction needs to be made from the professional services sector when reviewing the market size estimates shown in Exhibit III-11, and that is that they contain user expenditures for equipment, software products and other services (e.g., processing) as well as those for the professional services element. In systems integration, the vendor takes responsibility for providing a complete solution to an information systems problem.

One of the difficulties of analyzing systems integration as a market is that systems integration can mean different things to different people. Many services vendors recognise systems integration as a major opportunity, and some consider it to be the most important issue in the industry. Others consider it to be just a new name for something that has been going on for years.

For the purpose of clarification, INPUT defines systems integration as the provision of an integrated solution to a multidisciplinary information systems requirement.

EXHIBIT III-11



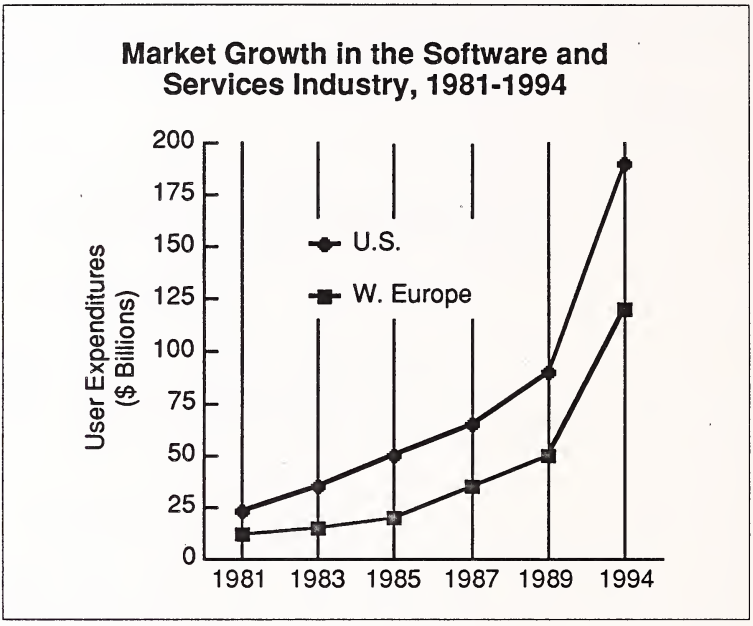
Systems integration projects are large, generally over $1 million. Vendors in this market provide a total solution that includes equipment, software and consultancy. Software is primarily bespoke, although some software products will generally be included. Projects have generally been limited to a specific country. There is increasing demand for international systems integration services within Europe, especially as the EC moves towards a single open market in 1992.

9. Conclusion

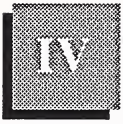
In concluding this chapter, which has overviewed the software and services industry, it is useful to examine the overall growth expectations for this important market. The overall world picture was indicated in the previous chapter (see Exhibit II-3), which clearly showed the dominance of the markets of the U.S., Western Europe and Japan.

The market estimates shown in Exhibit III-12 show the strong and continuing growth that has occurred in this industry in the two largest geographical sectors and the expected strong growth over the next five years.

EXHIBIT III-12



Vendor Briefings



Vendor Briefings

This chapter contains the information related to the identified vendor contracts resulting from INPUT's industry search. The information is presented in the following format:

- Name, address, telephone number
- Contact person
- Selection criteria (justification for inclusion)
- Company profile

The U.K. contracts are given in Section A and the U.S. contracts in section B below.

A

U.K. Vendor Briefings

The vendor briefings for U.K.-based companies included in this chapter are listed below:

- SD-Scicon PLC
- PAXUS Professional Services
- Enterprise Systems Group Ltd
- DSL Group Ltd
- IPL Information Processing Ltd
- Extel Financial Ltd
- DCM Services Ltd
- ACT Financial Systems
- CA Computer Associates Ltd
- Comshare Ltd
- Bluebird Systems Ltd
- Datasolve Ltd
- PE International Systems Group
- AT&T Istel
- Microgen U.K. Ltd
- Kapiti Ltd
- Admiral PLC

VENDOR BRIEFING

SD-SCICON PLC
Centrum House
101-103 Fleet Road
Fleet
Hampshire
GU13 8NZ
Telephone: 0252 622161
Fax: 0252 616480

Contact: Mr. Geoff Holmes
Position: Technical Director

Selection Criteria

SD-Scicon is one of the most important software and services companies in Europe. As such, it is involved in many large project developments and in the development of and support for significant systems software. Whilst not actively seeking to invest in Northern Ireland, since Northern Ireland is a potential source of skilled staff this option is discussed from time to time at board meetings. The IDB should ensure that this senior group, through Geoff Holmes, is fully apprised of the details of the IDB package.

VENDOR BRIEFING

PAXUS PROFESSIONAL SERVICES
Meridian House
100 Hanger Lane
London
W5 1EL
Telephone: 081 997 5500
Fax: 081 991 0535

Contact: Mr. G. Allen
Position: Managing Director

Selection Criteria

The company is a member of the Paxus Corporation and supplies accountancy software for multiuser office systems. The company is in the process of reviewing investment plans and is therefore interested in the incentives offered by the IDB.

VENDOR BRIEFING

ENTERPRISE SYSTEMS GROUP LTD
Thameside Computer Centre
Ferry Works
Summer Road
Thames Ditton
Surrey, KT7 0QJ
Telephone: 081 398 8511
Fax: 081 398 0587

Contact: Mr. D. Martin
Position: Financial Director

Selection Criteria

The company supplies software, training and consultancy to the engineering and manufacturing industries. The group is intending to establish a sales office in Northern Ireland that will serve the total Irish market-place. Mr. Martin is reviewing the market opportunities and the set-up costs for such a venture and is particularly interested in the financial incentives that the IDB can offer.

VENDOR BRIEFING

DSL GROUP LTD
115-129 Southwark Bridge Road
London
SE1 0NB

Telephone: 071 403 3456
Fax: 071 403 6774

Contact: Mr. J. Clapperton
Position: Financial Director

Selection Criteria

The company is a manufacturer and distributor of software and also has interests in recruitment and consultancy services. Investment is being considered for 1991, and Mr. Clapperton is therefore interested in the financial incentives that the IDB can offer. He requested that the board contact him early in 1991 when the company's investment plans will have been more completely defined.

VENDOR BRIEFING

IPL INFORMATION PROCESSING LTD
Eveleigh House
Grove Street
Bath
Avon
BA1 5LR
Telephone: 0225 444888
Fax: 0225 444400

Contact: Mr. Mike Jonson
Position: Finance Director

Selection Criteria

IPL provides software development, consultancy and support services to the aerospace, defence, telecommunications and printing industries. The company is currently considering the establishment of an office in Europe and does not dismiss Northern Ireland as a potential site. The Managing Director, Mr. D. Embleton, requested that the board use Mr. Mike Jonson as the primary point of contact.

VENDOR BRIEFING

EXTEL FINANCIAL LTD
Fitzroy House
13-17 Epworth Street
London
EC2A 4DL

Telephone: 071 251 3333
Fax: 071 251 2725

Contact: Mr. M. Brooks
Position: Managing Director

Selection Criteria

This company operates a worldwide operation gathering financial market data for analysis and presentation to the financial world via its London Data Centre. This operation also generates additional services and support functions. Extel is currently reviewing its future development in Europe over the next two to seven years. Mr. Brooks believes that it should be established in Northern Ireland. He would consider any proposal that might result from discussions with the IDB, which should contact him directly for further talks.

VENDOR BRIEFING

DCM SERVICES LTD
Shire Park
Welwyn Garden City
Hertfordshire
AL7 1LB

Telephone: 0707 372166
Fax: 0707 372202

Contact: Mr. W. Norris
Position: Manager - National Marketing

Selection Criteria

DCM is a PC maintenance company providing both hardware and software services. Expansion into Northern Ireland is being actively considered by the company, which has historically grown through acquisition. However, owing to the incentives provided by the IDB, it would consider an organic investment into a new facility. The company requests that the board use Mr. Norris as the primary point of contact; he will involve the Chairman, Mr. Peter Clair and the Managing Director, Mr. Jervis as appropriate.

VENDOR BRIEFING

ACT FINANCIAL SYSTEMS
The Cloisters
12 George Road
Egbaston
Birmingham
B15 1BR

Telephone: 021 455 6111
Fax: 021 454 2415

Contact: Mr. M. Whale
Position: Director—Technical Services

Selection Criteria

ACT is a provider of software to the financial services sector. The company is actively considering the establishment of a service centre in Northern Ireland and is particularly interested in the financial incentives offered by the IDB.

VENDOR BRIEFING

CA COMPUTER ASSOCIATES LTD
Computer Associates House
183-187 Bath Road
Slough
Berkshire
SL1 4AA
Telephone: 0753 77733
Fax: 0753 825464

Contact: Mr. Azagury
Position: Managing Director

Selection Criteria

The company is part of Computer Associates International, which has a worldwide presence as a software and services supplier. The U.K. management is currently considering the siting of a proposed disk duplication and packaging operation. The marketing manager, Mr. M. Maunder considers that, as a result of the incentives offered, Northern Ireland should be considered a potential location.

VENDOR BRIEFING

COMSHARE LTD
32-34 Great Peter Street
London
SW1P 2DB

Telephone: 071 222 5665
Fax: 071 222 5874

Contact: Mr. J. Cutting (0533 470555)
Position: Director—Product Development

Selection Criteria

Comshare is a provider of management and executive information systems. The company is currently reviewing its European investment strategy and is prepared to consider Northern Ireland as a result of the incentives offered by the IDB. In the first instance, the company is seeking to establish a warehousing and distribution facility with the possibility of a later investment in a software development centre. The IDB is asked to regard Mr. Cutting as the primary contact. The number is 0533 470555.

VENDOR BRIEFING

BLUEBIRD SYSTEMS LTD
Hertford Place
Denham Way
Rickmansworth
Hertfordshire
WD3 2ZB

Telephone: 0923 770000
Fax: 0923 896755

Contact: Mr. R. Bigwood
Position: Information Systems Manager

Selection Criteria

The company is a supplier of application software for IBM systems. It is actively considering investing in a warehousing and distribution facility in Northern Ireland, with potential for a further investment in a software development centre. Assistance is sought from the IDB in clarifying the plans for these projects.

VENDOR BRIEFING

DATASOLVE LTD
99 Staines Road West
Sunbury-on-Thames
Middlesex
TW16 7AH

Telephone: 0932 785566
Fax: 0932 789562

Contact: Mr. Bill Ellis
Position: Sales and Marketing Director

Selection Criteria

The activities of the company, which is part of Thorn EMI Software, can be divided into four main areas: data centre management, which incorporates facilities management; on-line processing services and disaster recovery; workstation management, including network management, and the provision of personal computing solutions. The applications management activity is principally involved in the development of administrative and decision support systems. Finally, the company is involved in human resource planning. The company is potentially interested in using a facility in Northern Ireland as a product development centre, and Bill Ellis would be interested in a preliminary telephone conversation with the IDB.

VENDOR BRIEFING

PE INTERNATIONAL SYSTEMS GROUP
161 Fleet Road
Fleet
Hampshire
GU13 8PD

Telephone: 0252 625121/628014
Fax: 0252 617665

Contact: Mr. Gerald Penney
Position: Managing Director

Selection Criteria

The company is part of PE International PLC whose activities are divided into management and systems consultancy, contract staff resourcing and systems development. The systems group is the division whose requirements most closely match the skills offered by the IDB. Gerald Penney is prepared to consider establishing facilities anywhere in the U.K. that can offer an abundance of programming skills, although he has not previously considered Northern Ireland.

VENDOR BRIEFING

AT&T ISTEL
PO Box 5
Grosvenor House
Prospect Hill
Redditch
Worcestershire
B97 4DQ
Telephone: 0527 64274
Fax: 0527 63360

Contact: Mr. John Hardy
Position: International Business Development Director

Selection Criteria

The company is a supplier of computer systems and network services, with particular focus on computer-integrated manufacturing and value-added data services. Although there is no intention to invest in further development facilities at present, the company is keen to explore potential investment opportunities and has considered options as far afield as the Far East. John Hardy is therefore eager to learn more about the incentives offered by the IDB.

VENDOR BRIEFING

MICROGEN U.K. LTD
Sattislea Road
Mayfield Industrial Estate
Dalkeith
Midlothian

Telephone: 031 663 4952
Fax: 031 660 5937

Contact: Mr. James Oag
Position: Sales and Marketing Manager

Selection Criteria

The company is one of three operating companies of Microgen Holdings PLC, which is a group operating in the U.K. and Ireland, Scandinavia and Germany. The company provides information management services to its clients through the medium of computer output microfilm, laser printing, and computer-aided phototypesetting.

A decision to invest in Northern Ireland has been agreed in principle and Mr. James Oag has been given the responsibility of managing the project.

VENDOR BRIEFING

KAPITI LTD
250 Kennington Lane
London
SE11 5RE

Telephone: 071 587 0033
Fax: 071 735 3765

Contact: Mr. Martin Stone
Position: Financial Controller

Selection Criteria

The company supplies software systems for international financial trading and wholesale and retail banking operations and has offices in the U.S., the Far East, Australia and Africa. Although no plans exist to invest in new facilities at present, Mr. Stone is interested in the details of financial incentives that the IDB is able to offer.

VENDOR BRIEFING

ADMIRAL PLC
Admiral House
193-199 London Road
Camberley
Surrey
GU15 3JT

Telephone: 0276 692269
Fax: 0276 691541

Contact: Mr. Clay Brendish
Position: Chairman

Selection Criteria

The company is a provider of IT consultancy and independent advice on issues related to the procurement of computer software. It has also developed a number of software tools for performance monitoring and capacity planning for Tandem Hardware. Mr. Brendish is interested in the details of the investment opportunities offered by the IDB.

B

U.S. Vendor Briefings

The vendor briefings for U.S.-based companies included are listed below:

- AFTEC Inc.
- Daly & Wolcott Inc.
- The Data Group Corporation
- Digitize Inc.
- Compu Soft Inc.
- Intellution Inc.
- P11 Enterprises
- RS Means & Co. Inc.
- Software Plus Inc.
- Power Technology Inc.
- Software Export Corporation

VENDOR BRIEFING

AFTEC INC
200 Central Ave
Mountainside NJ 07092

Telephone: 0101 (201)
789 3222
Fax: 0101 201 789 8955

Contact: Mr. John Ross
Position: President

Selection Criteria

Mr. John Ross oversees all aspects of the corporation. His primary responsibilities involve setting up relationships and programs, then letting other people run them.

AFTEC is seeking a business partner with existing knowledge of the current market conditions in Northern Ireland and Europe. AFTEC would by "very enthusiastic" about a joint venture into Northern Ireland. The company has had clients in the U.K. for six to seven years and it needs to support these clients. In order to facilitate data transfer, the company needs to provide software to companies with whom its clients conduct business. Limitations are not so much due to finances (although this is a consideration) as a lack of market knowledge. Financial incentives would be helpful, especially reduced cost of market entry. There are no particular skill concerns. There are concerns about the Northern Ireland location, regarding image, disruptions, and employee safety.

VENDOR BRIEFING

DALY & WOLCOTT INC.
PO Box 1509
East Greenwich RI 02818

Telephone: 0101 (401) 823 8400
Fax: 0101 (401) 823 7268

Contact: Mr. Andrew Kiza (ext. 240)
Position: VP Marketing

Selection Criteria

Mr. Andrew Kiza has overall responsibility for national and worldwide marketing operations, for both direct sales and distributors.

Daly & Wolcott is seeking either a base for customer consulting or a site for software manufacturing. The company is in the very preliminary stages of overseas expansion and would welcome contact from the IDB. Finance is not the only consideration. The company needs people who are already familiar with IBM midrange computers because there are concerns about existing skill levels. Mr. Kiza felt there were no particular advantages or disadvantages to locating in Northern Ireland.

VENDOR BRIEFING

THE DATA GROUP CORP.
(A NYNEX CO)
775 Bedford St.
Burlington Business Centre II
Burlington MA 01903

Telephone: 0101 (617) 272 4100
Fax: 0101 (617) 229 6189

Contact: Mr. David Olsson
Position: VP Marketing

Selection Criteria

Mr. Olsson has responsibility for the marketing of The Data Group's software products, including the use of distributors in Europe.

The Data Group currently uses distributors in Europe. They would like to expand their overseas presence by opening a facility for manufacturing as well as software development. There is interest in being contacted by the IDB. The Data Group is still in the preliminary planning stages of European expansion. There are concerns regarding the availability of skilled UNIX personnel, especially those with skills in 'C' and other UNIX tools. Investment assistance is certainly a consideration, but due to the early stages of planning, it is uncertain precisely what types of assistance would be of most interest. The Data Group is not known to have any preconceived views as to where the site should be located.

VENDOR BRIEFING

DIGITIZE INC
158 Edison Road
Lake Hopatcong
N5 07849
Burlington MA 01903

Telephone: 0101 (201) 663 1011
Fax: 0101 (201) 663 4333

Contact: Mr. Craig Smith
Position: Senior Vice President

Selection Criteria

Mr. Smith is the Business Development executive. He has overall responsibility for the running of the company, along with the president. Mr. Smith has particular experience in developing companies, guiding growth and technology.

Digitize currently uses distributors in the European market-place. It would prefer not to, because profits are split between the distributors and Digitize, and there is less control over the products. Mr. Smith is very interested in speaking with an IDB representative, especially regarding financial incentives. Capital investment is a definite limiting factor in opening its own facility in Europe. It is not known to have any preconceived view as to where this site should be located. Mr. Smith feels that product manufacturing and service can be provided at the site.

VENDOR BRIEFING

COMPU SOFT INC.
200 Perrine Road
Suite 220A
Old Bridge NJ 08857

Telephone: 0101 (201) 727 1500
Fax: 0101 (201) 727 1503

Contact: Mr. Noel McMenamy
Position: VP Sales and Marketing

Selection Criteria

Noel McMenamy is the Vice President Sales/Marketing and is co-owner with his brother Jerry, who is the President. He is in charge of business relationships and new developments.

Compu Soft is an IBM systems house designing software for the apparel and textile industries in the IBM AS/400 environment.

The company is looking to expand its horizons in the European marketplace by opening a branch sales office or working with a European affiliate to promote the company's products in Europe.

Mr. McMenamy states that because an affiliate has already been set up on the West Coast, geographic considerations are not new to them and would not be a problem. He envisions this operation providing Level I support, including modifications to software. He feels that Europe offers a tremendous opportunity for his products. Currently the company is adding to the existing line and unveiling a number of new applications for the apparel and textile industries.

He agrees that financial limitations are an issue for Compu Soft, which is a small company of only 13-14 persons, with revenues of $5-10 million.

Necessary skills would be familiarity with the IBM AS/400 and some form of apparel/textile industry experience. He would be looking for a staff of 8-10 persons.

His only concern is the political situation in Northern Ireland—how secure it might be and whether it would have any effect on operation. He was interested in knowing whether there is a particular location in Northern Ireland that the IDB has in mind.

VENDOR BRIEFING

INTELLUTION INC
315 Norwood Park South
Norwood MA 02062

Telephone: 0101 (617) 769 8878
Fax: 0101 (617) 769 1990

Contact: Mr. Fred Busch
Position: Director of International Operations

Selection Criteria

Intellution develops and markets a range of process control and factory automation software for the IBM PC. The company currently has an office in Belgium and is intending to open a second outlet in Europe within the next 12 months. This planned facility would be for both sales and marketing operations and software development and support activities, and the company, therefore, has a requirement for experienced sales and software development staff. The current stated preference for the location of the investment is England but Mr. Busch would like to discuss the financial incentives offered by the IDB.

VENDOR BRIEFING

P11 ENTERPRISES
PO Box 5185
Bridgeport CT 06610

Telephone: 0101 (203) 366 0258
Fax:

Contact: Mr. Russell D. Hoffman
Position: President

Selection Criteria

The company develops and markets educational software designed to teach computer graphics and programming skills. Mr. Hoffman is planning an investment in Europe which would be primarily a research, development and production centre. Artists, programmers, trainers and engineers are utilised in the development of these products, and the company is eager to take advantage of the lower labour costs prevailing in Europe compared to the United States. Mr. Hoffman would like to discuss the financial incentives offered by the IDB.

VENDOR BRIEFING

RS MEANS & CO INC
100 Construction Plaza
Kingston MA 02364

Telephone: 0101 (617) 585 7880
Fax: 0101 (617) 585 7466

Contact: Mr. Jay Devin
Position: President and Chief Executive Officer

Selection Criteria

The company develops and markets software for the management of construction projects and is also a publisher of information used by construction companies in project estimation. The opening of a European office is actively under consideration. The office would initially market and support the software packages produced by the company but would subsequently also be involved in the publishing interests of the business. Although Mr. Devin expressed some concern over the political situation in the province, he is interested in the financial incentives that the IDB is able to offer.

VENDOR BRIEFING

SOFTWARE PLUS INC
301 Rt. 17 North
Rutherford NJ 07070

Telephone: 0101 (201) 933 7587
Fax: 0101 (201) 933 3365

Contact: Mr. Robert Farina
Position: Vice President/General Manager

Selection Criteria

Software Plus develops and markets both a range of software for educational establishments and personnel software, which is sold across a broad range of industry sectors. The products are designed to run on the IBM AS/400 system and are written in RPG/400 and "C". The company is considering the establishment of a European office, which would support existing packages and develop new products. Mr Farina is interested in the financial incentives offered by the IDB but also has some minor reservations concerning the availability of the specific software skills he requires.

VENDOR BRIEFING

POWER TECHNOLOGY INC
1482 Eric Boulevard
Box 1058
Schenectady NJ 12301

Contact: Mr. Ian Grant
Position: Vice President

Telephone: 0101 (518) 374 1220
Fax: 0101 (518) 346 2777

Selection Criteria

The company provides applications software, professional services and some specialist hardware for the electricity generating industry. A facility has recently been opened in England but the company is looking for further expansion opportunities within the U.K. The intended office would be required to support all the main activities of the company, and Mr. Grant has indicated that many of the company's consultancy, development and support functions can be carried out remotely. Although finance is not a limiting factor, the company is obviously interested in the incentives that the IDB can offer. Mr. Grant has specifically stated that proximity to a good airport should be considered a requirement.

VENDOR BRIEFING

SOFTWARE EXPORT CORPORATION
PO Box 32
Kingsbridge MA 02139

Telephone: 0101 (617) 642 5726
Fax:

Contact: Mr. Michael Rooney
Position: Chairman

Selection Criteria

The company develops and markets applications software for the import/export industry and is planning to open several facilities in Europe in the next few years. The intention is to employ both R&D and sales support staff in the European offices. Mr. Rooney has dealt with the IDB in one of his previous companies and is therefore well aware of the incentive package offered by the IDB. No decisions have yet been taken on the location of the planned European investments. However, Mr. Rooney has commented that Northern Ireland is some distance from the company's major European markets.